Operating Instructions
Tachograph 1324

VOLVO

Contents

System overview **1**

General information **2**

Operating controls **3**

Enable the device **5**
Opening the drawer 5
Inserting the driver 2 chart 6
Inserting the driver 1 chart 6
Setting the time groups 8

Removing the charts **9**

Driver change **10**

Adjusting the time **11**

Messages **12**
A message is being displayed 12
Displaying the error memory 13
Error code Overview 14
Troubleshooting 15
Updating the chart carrier 15

Description of the chart **16**
The appropriate chart for the device 16
Recordings on the front part of the chart 17
Entries in the centre field 18
The rear side of the chart 19

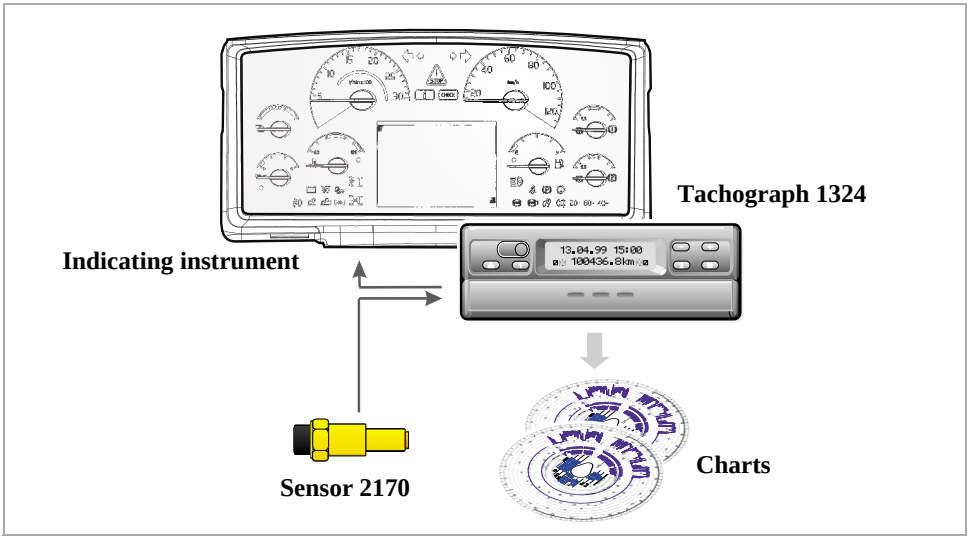
Recording of failures **20**

Appendix **21**
Compulsory inspection of tachographs 21
Maintenance and cleaning 21

Definitions contained in these operating instructions

Driver 1 = The person who is driving the vehicle at the moment or who will be driving the vehicle.

Driver 2 = The person who is not driving the vehicle.



The new **tachograph 1324** sets new standards in performance, technology, and design due to its modular design with separate display and recording. The tachograph 1324, which is in DIN radio compartment format, is an innovative system component.

Driver 1 and driver 2 conveniently select the respective working time groups via the control keys.

Besides the date, time and distance travelled, the selected working time groups and the symbols of the inserted charts are clearly shown in the display. Failures at the device or of a system component will be signalled automatically.

Like before, the vehicle speed and the distance travelled as well as the driver specific driving, working and break times are recorded on the **tachograph chart**.

Within the immediate field of view of the driver, there is an approved **indicating instrument** with analogous vehicle speed pointer, digital distance counter, time and trip odometer. The function monitor ⚠ refers to messages of the tachograph 1324.

Together with the intelligent **sensor 2170**, the system forms a reliable unit. The sensor provides real-time pulses and encoded data for recording the distance travelled and the vehicle speed.

May all your journeys be pleasant!

2 General information

The symbols in these operating instructions have the following meanings:

> ⚠ **ATTENTION!**
> The text next to this symbol contains important information, which has to be observed to prevent the device from being damaged.

☞ **NOTES**
or additional information, which, if not observed, may lead to failures, are marked by this symbol.

> ⚠ **Please observe the notes listed below!**

❒ **Notes for the operation of the tachograph 1324**

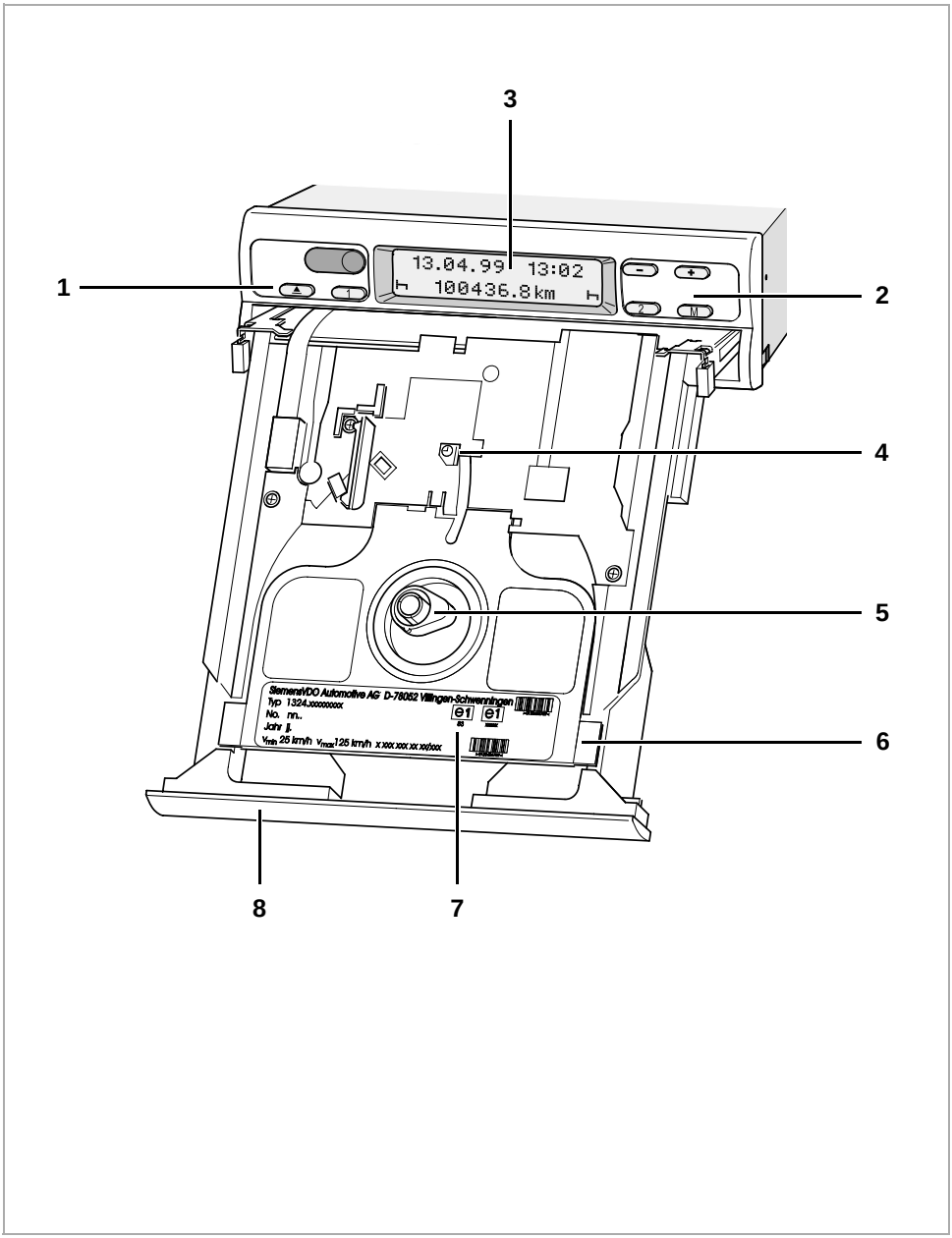
- Only open the drawer for inserting or removing the charts. Otherwise, keep it shut at all times to avoid damages and to prevent it from being contaminated.
- Do not use the drawer as a kind of support, like for example, for writing on the charts.
- Do not use any abrasive detergents for cleaning the device, nor any solvents like diluent or naphtha.
- The tachograph 1324 will be installed and sealed by authorised persons. **Please do not intervene at the device or at the supply lines.**

❒ **Notes for the handling of the charts**

- **The chart is driver-specific and may thus not be transferred to other persons!**
- Use charts provided by the manufacturer. Make sure that the full-scale value and the approval mark correspond to those on the tachograph 1324, ➥ *see page 16*.
- Only insert perfect charts, they may neither be folded, nor be torn at the perimeter and / or at the opening, nor be wavy or damaged in any other way!
- The recorded charts must be safely stored and protected against damage, see also Section 15 of the CR (EEC) No. 3821/85.

❒ **Reference to legal provisions**

- Those who modify the settings of the controlling device or at the signal feed line, which influence the record issued by the controlling device, especially when intending to deceive, may violate official penal provisions or administrative regulations!



Tachograph 1324

4 Operating controls (see figure page 3)

1 **Left-hand keypad**

⏏ Key for unlocking the drawer.

1 Key for adjusting the time group for driver 1.

2 **Right-hand keypad**

2 Key for adjusting the time group for driver 2.

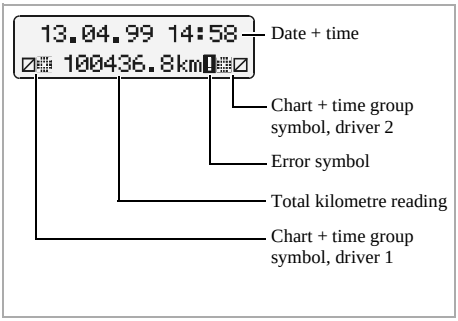
M Key for selecting the following functions:

- "Time Adjustment", ➥ *see page 11*.
- Display "Error Memory", ➥ *see page 13*.

\+ Keys for adjusting the time and for
− displaying the current error messages.

3 **Display**
(lit up if the ignition is switched on)

- The basic display is shown permanently.
- Messages / notes are displayed automatically, ➥ *see page 12*.



4 **Checkpoint marking**
for checking the temporally correct position of the chart carrier.

5 **"Pear-shaped" chart carrier**

6 **Separating plate**
between driver 1 and driver 2 chart.

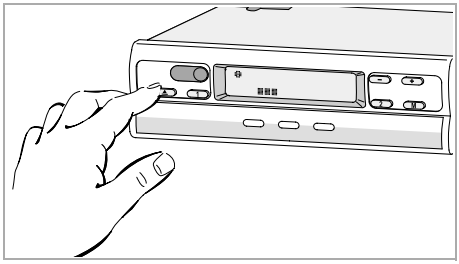
7 **Nameplate**
The manufacturer, device type, inspection mark and serial number are indicated here.

8 **Hinged drawer**

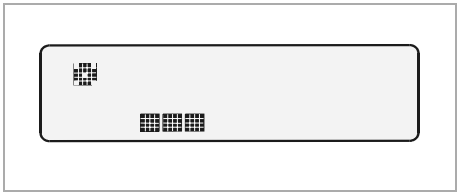
Opening the drawer

☞ The drawer may only be opened, if ...
- the vehicle is at a standstill and
- the ignition is switched on.

1. Press the ⏏ key.

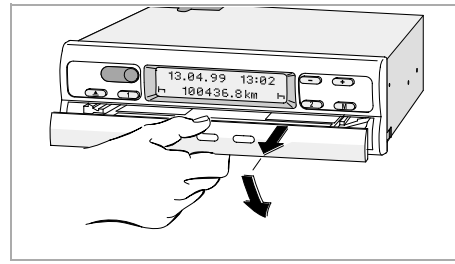


➢ In the display, the "Ejection active" symbol is shown. Additionally, a process indicator shows that this process may take some time.

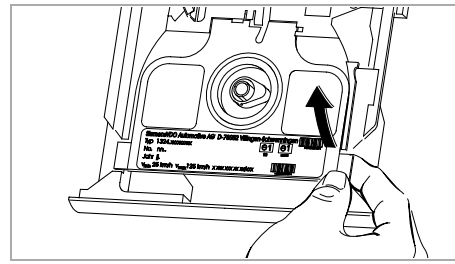


➢ Wait until the drawer has been unlocked.

2. Pull out the hinged drawer to the limit stop and tip it down.
Remove driver 1 chart if necessary.



3. Tilt separating plate entirely upwards.
Remove driver 2 chart if necessary.

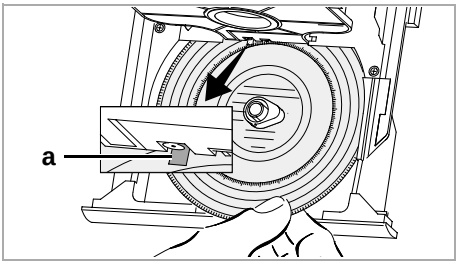


Inserting the driver 2 chart

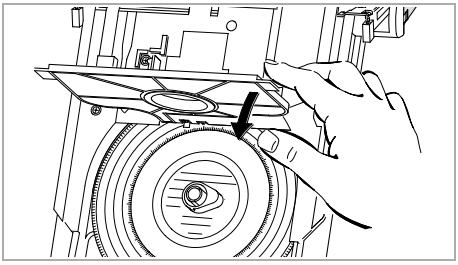
⚠ Before starting to drive, the centre field of the chart has to be duly recorded, ➥ *see page 18*.

4. The **driver 2** inserts the recorded chart with the front side facing up in the "pear-shaped" chart carrier.

☞ Make sure that the chart is located below the spring element **(a)**.



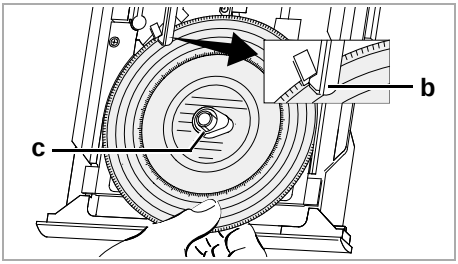
5. Tilt separating plate downwards.



Inserting the driver 1 chart

6. The **driver 1** inserts the recorded chart on the separating plate in the chart carrier with the front side facing up.

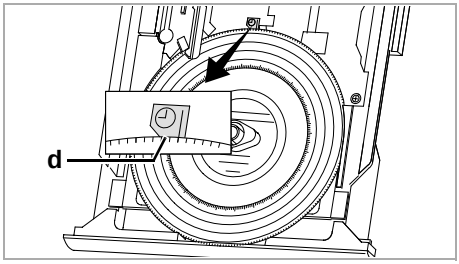
☞ Make sure that the tachograph chart is located under the holding-down device **(b)** and the latches **(c)** of the pear-shaped chart carrier.



Comment on 1 driver operation

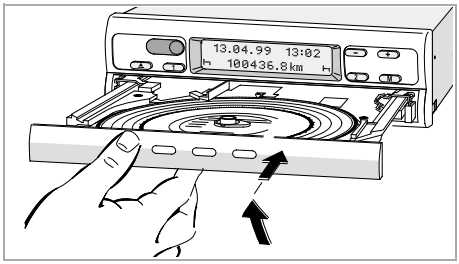
In the 1 driver operation, only the chart for driver 1 is to be inserted on the separating plate.

7. Make sure that the position of the chart carrier is temporally correct. The time scale of the chart has to be adjusted to the current time of the display at the respective marker **(d)**.

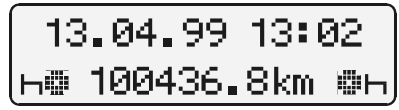


➢ If this is not the case, please start the chart carrier settings update,
➥ *see page 15*.

8. Bring the hinged drawer into a horizontal position and push it in until it latches.



9. The **basic display** is shown:
- ➢ including date, time, and the total number of kilometres,
- ➢ additionally, the symbols for the inserted charts, and current position of the time groups, on the left for driver 1 and on the right for driver 2, are displayed.



Notes on the basic display

- The time of the tachograph 1324 is adjusted to the legal time of the country where the vehicle has been registered. The start and the end of the daylight saving time are deposited within the device and will be updated automatically.
  ➥ *See also page 14 "Error code overview".*
- In case an exclamation mark appears next to the total kilometre reading, there has been a failure. ➥ *See also page 14 "Error code overview".*

Setting the time groups

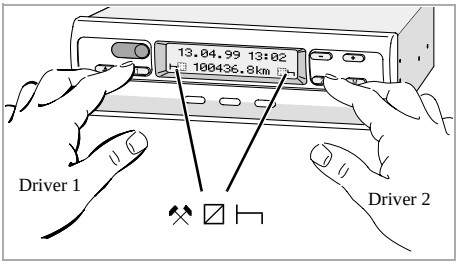
2 driver operation

10. Driver 1 presses the (1) key.

➢ Press the key several times, until the desired time group is shown in the display.

11. Driver 2 presses the (2) key.

➢ Press the key several times, until the desired time group is shown in the display.



As soon as the vehicle starts to drive, the tachograph 1324 will automatically record

- "⊛" for driver 1
- "⊠" for driver 2

and the corresponding symbols will appear in the display.

1 driver operation

- Only insert the chart for driver 1 on the separating plate during 1 driver operation.
- Set the time group for driver 2 to break time "⊢¬", otherwise there will be an error message.

Time group distribution

⊛ = driving times

⚒ = other working times

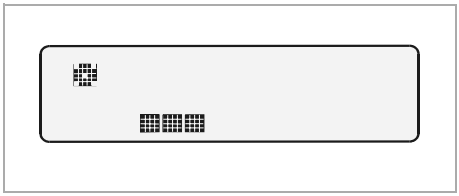
⊠ = availability
(waiting times, co-driver times, times in sleeping cabin during ride)

⊢¬ = break times and resting periods

Remove your chart from the tachograph 1324
- in case of a change of driver or vehicle,
- at the end of the working time
- or after 24 hours at the latest.

☞ The drawer may only be opened, if ...
- the vehicle is at a standstill and
- the ignition is switched on.

1. Press ⏏ key.



➢ The "Ejection active"symbol is shown in the display. A process indicator signals that the records on the charts are being completed by the Tachograph 1324.
➢ Wait until the drawer has been unlocked.

☞ **Please do not switch off the ignition** while the "Ejection active" symbol is shown on the display!

2. Pull out the hinged drawer to the limit stop and tip it down.

3. Remove the charts and complete the inscription in the centre field,
➥ *see page 18.*

4. Bring the hinged drawer into a horizontal position and push it in until it latches.

Comment

In case you have, however, switched off the ignition, it is possible that the drawer does not properly lock after closing. In this case, please proceed as follows:

1. Switch on the ignition.
➢ Wait until the ejection procedure has been finished.

2. Then push in the drawer until it locks into place.

3. Switch off the ignition again.

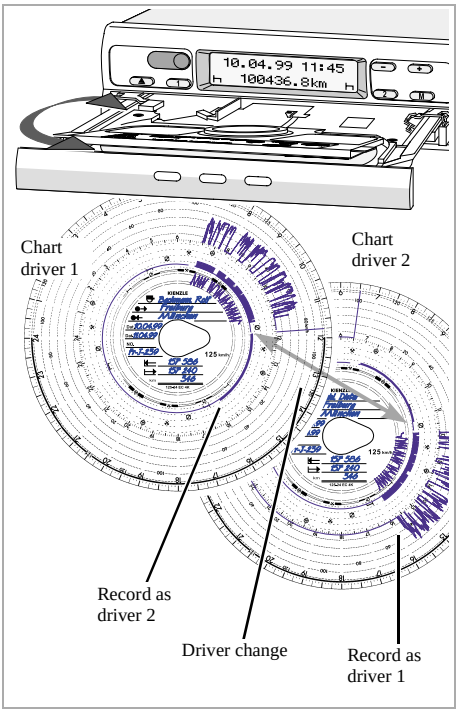
Automatic switching off of the time group and the distance recording

In case the drawer remains closed with the charts inserted for more than 25 hours, the tachograph 1324 automatically records the time group "⊢¬" for driver 1 and 2. The tachograph 1324 thus goes easy on the vehicle batteries.

Notes on a standstill of the vehicle

⚠ If the vehicle will not be used for a long time, please make sure that there is no chart in the tachograph 1324; e.g. in case of maintenance or repair work or immobilisation of the vehicle.

10 Driver change



In case the driver changes the vehicle during his daily working time, he has to take the chart with him and note the vehicle change on the rear of the chart.

Case 1:

The crew changes among themselves, driver 2 becomes driver 1:

1. Exchange the charts.
   - ➢ Driver 1 (now driver 2) places his chart below the separating plate and driver 2 (now driver 1) on the separating plate.
2. Select the desired time groups.
   - ➢ The new driver 1 presses the key (1), the driver 2 the key (2).

Case 2:

Driver 1 or driver 2 leaves the vehicle:

1. The respective driver takes his chart with him.
2. The new driver 2 places his chart below the separating plate.
   or:
   The new driver 1 places his chart on the separating plate.

Comment

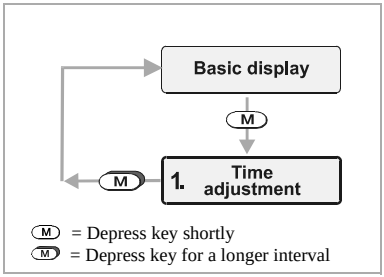
In case there is no new driver 2, the time group has to be switched to break time "⊢¬", otherwise an error message will be displayed.

Case 3:

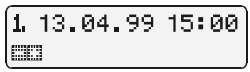
Driver 1 and driver 2 both leave the vehicle:

1. Both drivers remove their charts from the device.
2. The new crew inserts the chart according to their respective functions (driver 1 or driver 2) in the device.

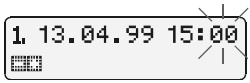
☞
- The function **TIME ADJUSTMENT** may only be selected if the vehicle is stationary.
- For an automatic synchronisation of the chart carrier and the time, **the ignition has to be switched on and there must not be any chart inserted in the tachograph 1324**.



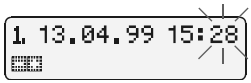
1. Select the **TIME ADJUSTMENT** via M.



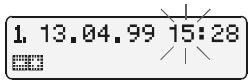
2. Activate the minutes counter via + or −, the minutes start to flash.



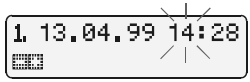
3. Depress + or − key until the desired value is being displayed.



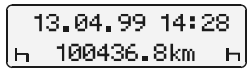
4. Activate the hours counter via M, the hours start to flash.



5. Depress + or − key until the desired value is being displayed.
- ➢ When exceeding or undershooting 00:00, the date will be adjusted automatically.

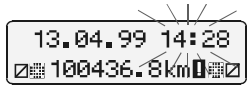


6. Acknowledge the time adjustment by depressing the M key for more than 2 seconds. The basic display will then be shown again.



Comment

If you adjust the time while a chart is inserted, the error symbol will be shown in the display and the time will be flashing. The tachograph 1324 will remind you to update the chart carrier settings;
➥ *see page 15.*

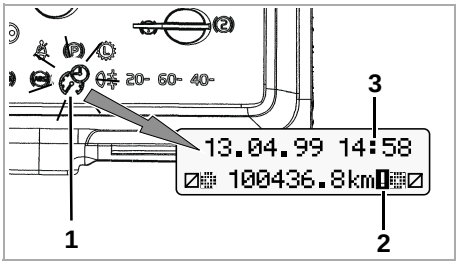


12 Messages

The tachograph 1324 monitors the functioning of the system and automatically signals any failure occurring in one of the components, the device or the handling. Messages and notes may be shown in the display immediately after having closed the drawer or when the failure occurs.

A message is being displayed

- The function monitor ⚠ **(1)** at the indicating instrument is lit up,
- an exclamation mark **(2)** will appear next to the total kilometre reading in the tachograph 1324 display and ...
- depending on the error type either the complete time display **(3)** is flashing or the colon between the digits may stop to flash.
- Additionally, the error is recorded in an electronical memory, ➥ *see "Displaying the error memory"*.
- Some failures are also documented by the tachograph 1324 on the chart, ➥ *see page 20*.

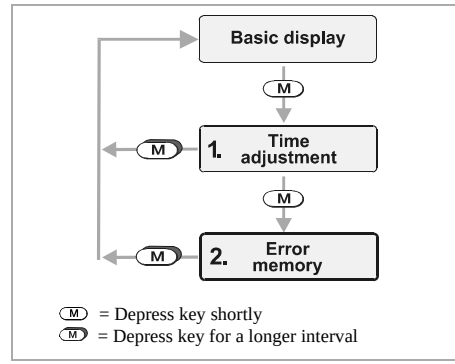


Displaying the error memory

To find out the reason for the error message please refer to the **ERROR MEMORY** menu.

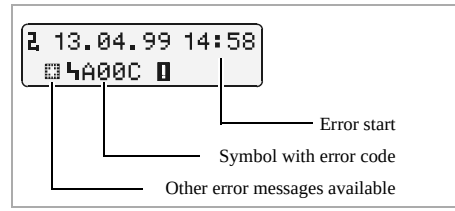
☞ The display **ERROR MEMORY** function may only be selected if the vehicle is at a standstill!

1. Select the **ERROR MEMORY** menu by shortly depressing the (M) key **twice**.

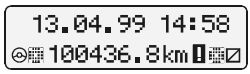
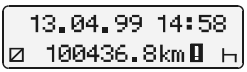
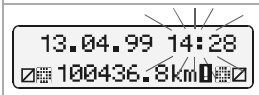
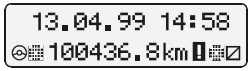
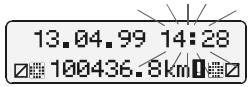
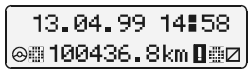


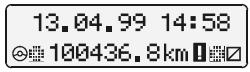
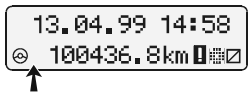
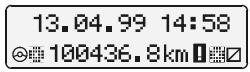
2. Via (+) or (–), other active errors may be displayed.

3. Call up the basic display again,
- Depress (M) key for more than 2 seconds
- or do not depress any key for 20 seconds.



Error code Overview

Displayed message	Code		Meaning / measure
	900A 900B	=	Error during CAN transmission **Contact Volvo workshop.**
	900F	=	Keypad error, key pressed too long or blocked
	9010	=	LCD error (display)
	9051 9052	= =	Driver 1 chart is missing Driver 2 chart is missing (This message will appear when switching from ⊢ to ⍁, for example, while the chart is missing.) **Insert chart(s).**
 (Time is flashing)	9053	=	• The tachograph 1324 has automatically changed over to the beginning or the end of the daylight saving time, • or the time has been adjusted with the chart inserted. **Note: update the chart carrier settings,** ➥ *see page 15.*
	9060	=	Error at the drawer **Start the ejection procedure and close the drawer again afterwards.**
	9061 9062 9063	=	Error in recording system (The tachograph 1324 will record these errors on the chart, ➥ *see page 20*.)
 (Time is flashing)	9064	=	Error during chart carrier settings update **Update the chart carrier settings once again,** ➥ *see page 15.*
 (Colon is not flashing)	9064	=	Error in the driving mechanism of the chart carrier **Check whether the charts have been correctly inserted.**

Displayed messages	Code		Meaning / measure
	9430	=	Error at "B7" v-pulse output
	A00C	=	Internal error
	A050	=	Trip without driver 1 chart (Error code cannot be found in the error memory.) **Insert driver 1 chart.**
—	A400	=	Power loss (Error code cannot be found in the error memory. The tachograph 1324 will record a power loss on the chart, ➥ *see page 20*.)
	A423 A822	= =	Error during sensor 2170 communication Error in sensor 2170 key / serial number / signal (The tachograph 1324 will record these errors on the chart, ➥ *see page 20*.)

Troubleshooting

After having remedied the error cause, e.g. in case of an operating error, the message will automatically be deleted.

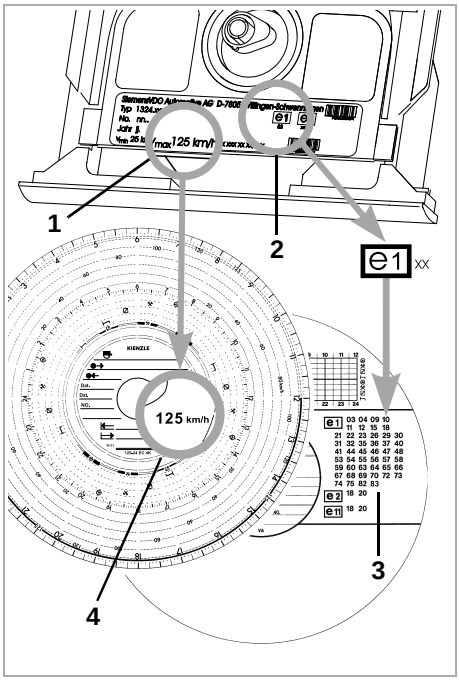
⚠ In case one of the messages is shown repeatedly, consult a authorized service workshop!

Updating the chart carrier

1. Open the drawer and remove both charts.
2. Close the drawer again.
   ➢ The tachograph 1324 will automatically update the time of the chart carrier, and the error symbol and the time will then stop to flash.
3. Open the drawer and insert new charts if necessary. The tachograph 1324 will be ready for use again.

16 Description of the chart

The appropriate chart for the device



> ⚠ When using (ordering) charts, always ensure that the **full-scale value (1)** and the **approval mark (2)** of the tachograph 1324 correspond to the details **(3)** or **(4)** on the chart respectively.

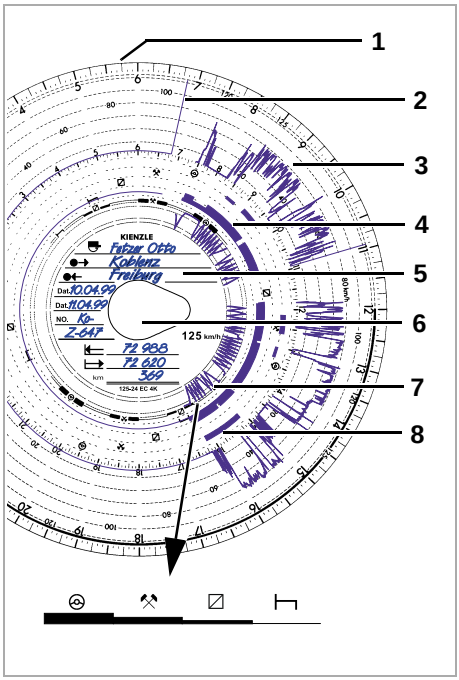
Outside the EU, the respective national approval marks and provisions are valid.

Depending on the full-scale value and the device design, you may use the following charts within the tachograph 1324:

Standard chart	Volvo part no.	Chart for electronical evaluation	Volvo part no.	Approval mark
125-24 EC 4K	3985719	125-24/2 EC 4B	20400028	e1-83
		125-3300-24/2 EC 4B	20400029	e1-85

= Chart for versions with engine speed recording (rpm).

Recordings on the front part of the chart



1 **Time scale**

2 **Opening marker**
Each opening of the drawer is being recorded.

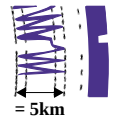
3 **Speed recording in kph**

4 **Time group recording**

5 **Centre field**

6 **"Pear-shaped opening"**
Ensures the temporally exact positioning of the chart.

7 **Distance travelled**



An up- or downward movement corresponds to 5 km.

Note

The distance recording will be interrupted if ...

- the time group switches have been set to break time "⊢" for both drivers and
- the ignition has been switched off and
- the additional record (option) is not active.

When the ignition is switched on, the recording of the distance will be continued correctly in terms of time and position.

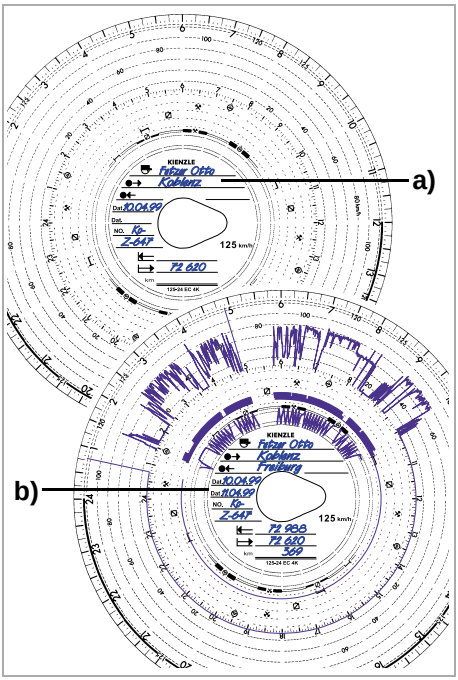
8 **Additional recording** (option)
Recording of additional working groups, e.g.: use of blue light, a police siren, etc.

Evaluation of charts

Besides the direct reading of the records, there is also the possibility of a precise evaluation of the recorded data. Further details will be readily provided by a Siemens VDO distributing centre.

18 Description of the chart

Entries in the centre field



a) ... before trip

- name and first name of the driver
- place of departure
- Dat. date of insertion (upper line)
- NO. vehicle registration number
- beginning odometer reading

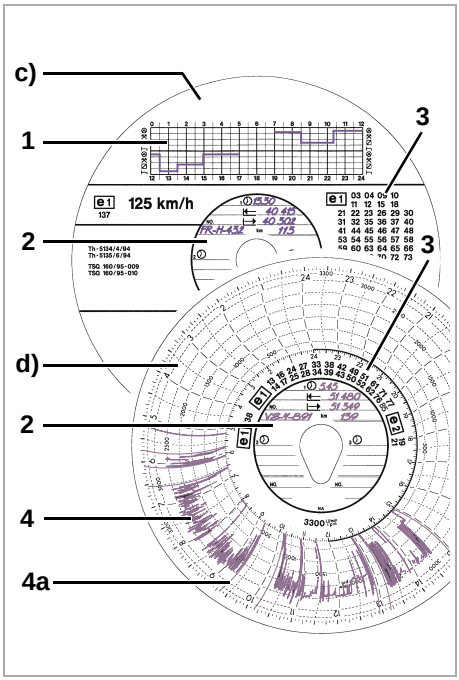
b) ... after trip

- place of arrival
- Dat. date of chart retrieval (bottom line)
- ending odometer reading
- km distance travelled (may be entered)

Comment

The entering of the name and first name as well as statements on the beginning and the end of the use is required by law and forms the basis of a later evaluation of the chart.

The rear side of the chart



The tachograph 1324 has two basic chart types:
c) without rpm recording
d) with rpm recording

1 **Entry field for the time groups**
This entry field is used for manual entries of the time groups. Manual entries are required if, for example, the crew members work away from the vehicle and therefore are not able to operate the tachograph 1324 or else in case of a failure of the time group recording mechanism.

2 **Centre field**
In the centre field, up to three vehicle changes may be entered manually.
The following data is required:

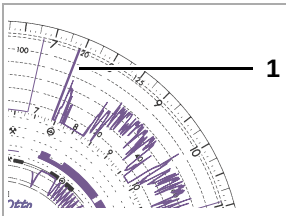
- time of vehicle change
- NO. the registration number of the new vehicle
- odometer reading at start of journey
- odometer reading at end of journey
- km distance travelled (may be entered)

3 **Approval mark field**
This part of the rear side contains information on the approval numbers of the chart and the devices for which the chart is approved.

4 **RPM recording**
The temporally exact recording (in rpm) is carried out on the rear side of the chart for driver 1.

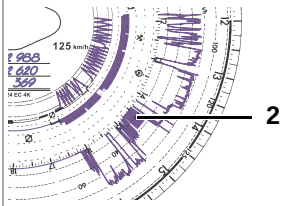
Note

The markers **(4a)** will be displayed for ignition on / off.



Power loss

In case there is power available again, the tachograph 1324 will draw a line **(1)** on the chart shortly after the vehicle has started to move.

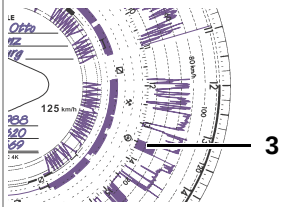


Sensor 2170 disconnection

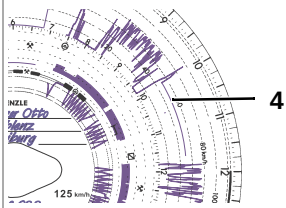
Failure of the transmission link between sensor 2170 ⇔ tachograph 1324:

- As soon as the vehicle stands still, the marker **(2)** is shown.

or



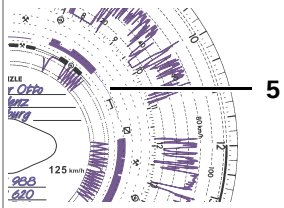
- The marker **(3)** is displayed immediately after the failure and remains there,
  until the cause of the failure has been remedied.



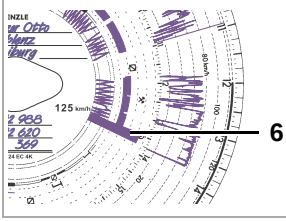
Device failures

Failures in the recording mechanism may
cause the following recording errors:

- Marker **(4)**, defect within the v-recording mechanism.



- Marker **(5)** and **(6)**, defect within the recording mechanism for the time group and distance record.



Compulsory inspection of tachographs

The vehicle owner is obliged to have the installed tachograph 1324 inspected at regular intervals.

At least once every two years, the proper operation of the tachograph 1324 has to be tested, e.g. in conjunction with the technical inspection of your vehicle.

Please ensure that the installation plate is replaced at each inspection and contains the information required.

Maintenance and cleaning

The tachograph 1324 is equipped with modern, maintenance-free technology. For this reason, preventive maintenance work is not required.

In case they are dirty, you may clean the housing, the display and the function keys by means of a slightly moistened cloth. In case this proves insufficient, special cleaning or preservative agents for plastics may also be used.

© 10.01 by Siemens VDO Automotive AG

Responsible for the contents:
Siemens VDO Automotive AG
Information Systems Commercial Vehicles
P.O. Box 1640
D-78006 Villingen-Schwenningen

All modifications of technical details compared to the description, data and figures of these operating instructions are reserved.

VOLVO
Volvo Truck Corporation
Göteborg, Sweden

20 151946

Printed in Sweden